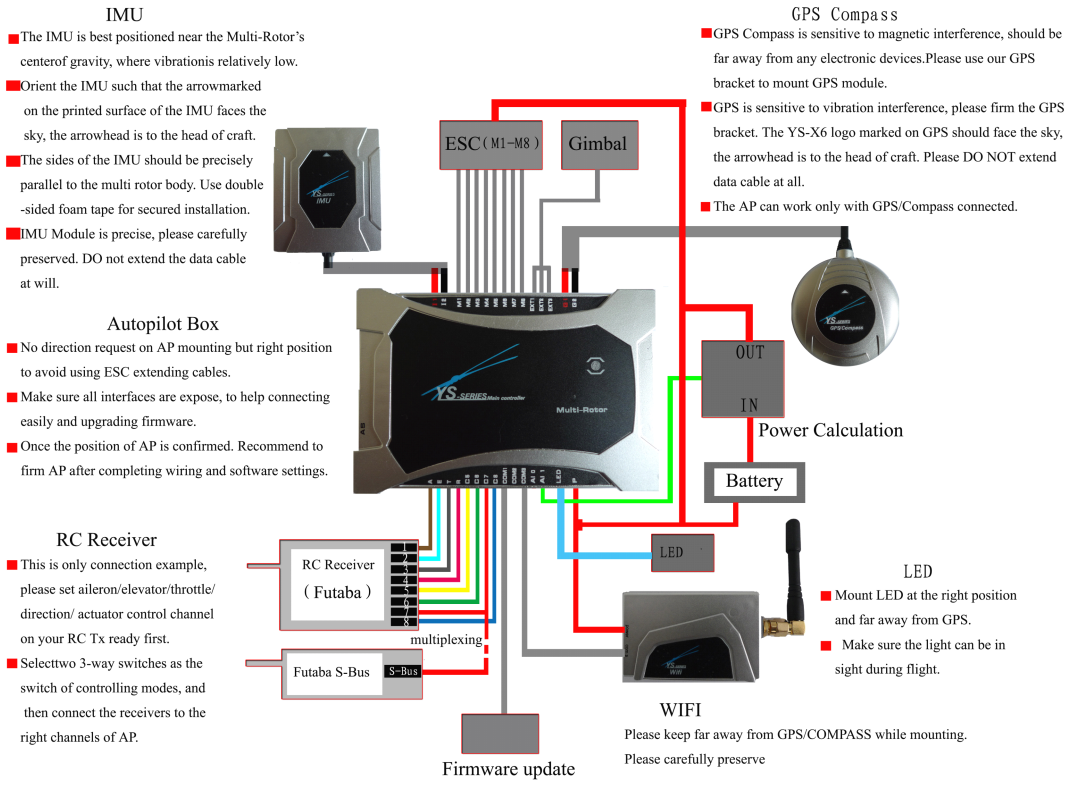
Ge Quick Start Guide

1 Assembly



Note:

The power supply range of MC (Autopilot) and WIFI is 3s~6s(Power remains a little), namely 10.8V~25.5V, MC provides 5.7V power to RC receiver automatically, no need to add any out-built power module. After correct connection and powering it, the autopilot will complete initialization in few seconds and LED light starts to blink in red for three times continuously , indicating the connection is correct and motivated successfully.

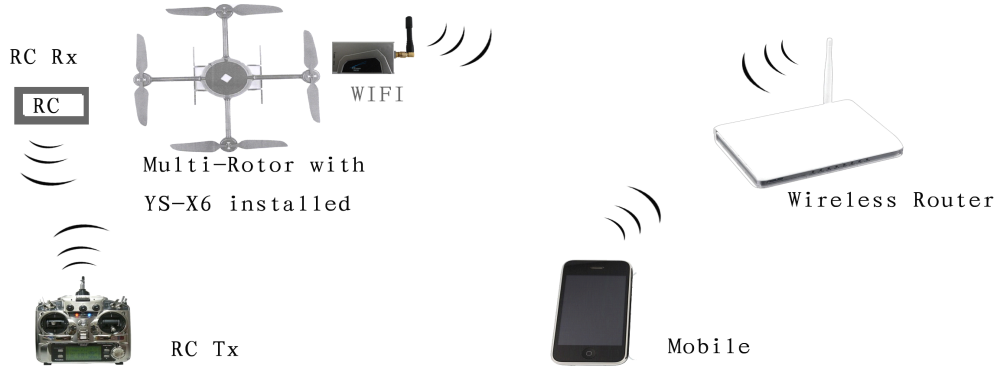
The above "the light blinks in red for three times" is a sign to check whether all hardware are working normally or not, all data connection is based on this. After powering if no "the light blinks in red for three times", please contact Zero UAV (Beijing) Intelligence Technology Co. Ltd. or its distributors directly. Otherwise, please check the assembly carefully refering to the above illustration.

Attention: Any wrong connection of IMU or GPS may result in burning out the devices.

ESC, the motor at work will produce severe magnetic interference, GPS and

magnetic sensor module must be by non-magnetic (non-iron), rack-mounted away from the motor, ESC (8-axle vehicle), and the arrowdirection toward the nose. Otherwise, the aircraft GPS mode will seriously circle can not be correct hover.

2 Router Setup



Step1: Download YS-GCS. It must be installed to the Mobile memory card. Android system can be installed automatically via running file installation once in the file manager. Apple system can be installed after APP jailbreak, please refer to" Apple Installation Instructions"

Step2 : Use wireless router to build AP. Set SSID of the router as"YS-X6-Serial No." (Note: The letters must be in Capital), password is 82890430, and use encryption method WPA2-PSK AES. Router IP must be 192.168.1.1 (The mobile with hotspot function can be also instead of router, but must make sure the mobile can set up SSID and password, in same way IP should be: 192.168.1.1)

Step3: Open WLAN on mobile/tablet to connect to router. (All the flight data shall be saved to YShj in mobile after connecting Wifi data, the YShj file can be replayed through one kind of tool of computer.)

Only same SSID: YS-X6-Serial No. Password: 82890430

3 Installation Guide

After connecting all data, you can set up the below options as showing in " Installation Guide" of GCS "Settings" (If the data is not connected, please read the above two steps carefully)

(1)Channel Calibration

(2)Check CH5 & CH6, set up F/S (Fails safe)

(3)ESC stroke calibration

(4)Set up aircraft type and parameters. Fill in local magnetic declination (West is positive, East is negative)

(5)Check the configuration direction of IMU & GPS

After completing the installation guide, can test fly manually.

(Please refer to the below website for magnetic declination)

http://www.ngdc.noaa.gov/geomagmodels/struts/calcDeclination

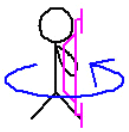
4 Magnetic Course Calibration

It's no need to calibrate the magnetic course in manual mode .But in GPS mode , the magnetic course calibration must be finished before take-off .The magnet on aircraft or neighboring magnetic filed can affect the magnetic compass to read the Earth Magnetic Field, thus may reduce controlling precision of Multi-Rotor aircraft even effect obstacles. Calibrations can reduce these effects to make sure the MC work normally in defective magnetic environment. Magnetic field data will display immediately after calibration but can not be saved to autopilot , the data can't be obtained any more after powering off.

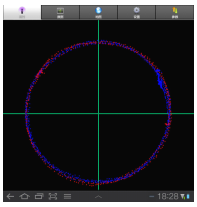
Calibration Steps

Step 1 : Select "level calibration" after clicking "magnetic compass calibration". After confirmation, it will display whether AP received the order of level calibration on magnetic compass in the middle status bar. If there is a successful display there, you can start the level calibration: level rotate the aircraft 2-3 laps slowly, can ask your assistant to monitor the attitude angle in "Data" window, please try best to make sure pitch and toll is within 3 degree when rotating (example: left 2/lift 2 is OK, but left 3/lift 2 is not good; It's ok to exceed 3 occasionally, AP shall stop collecting data while exceeding 3 degree and continue to collect data when recover 3 degree less),also can look the blinking light directly which connecting with AP, blinking light meet attitude requirements, off light means the attitude is too big.

Step2: After completing level rotation of 2-3 laps, make the craft head face the ground vertically, then select "Magnetic compass Vertical calibration" in GS, after sending out please confirm whether it's successful in the status bar, and then the roll and pitch will change close to 0 degree slowly via checking the attitude angle in "Data"(namely changed reference coordinate system, it's level when the craft head face the ground).Then take the craft head as Axis and keep attitude angle within 3 degree, level rotate 2-3 laps. You can also check the blinking lights which are connecting with AP, blinking lights meet attitude requirements; off lights indicate a too big attitude.



Step 3: Get through above operation, finished magnetic compass calibration, the GS can switch to RC Interface automatically, after waiting for scores of seconds, mobile will display the magnetic sensor data of AP, only look the red and blue circle in the middle of cross coordinates, if they are close to standard round, then indicates a successful calibration and data in good condition.



After correct assembly and successful magnetic compass calibration once, no need to recalibrate without any constructional reconfiguration or only upgrade the firmware.

5 Control Priority

User must select two 3-position switches and set them to CH5 & CH6 by RC transmitter.

Three modes can be switched through CH5, Manual/manual altitude holding /GPS 3 modes. CH6 can work only when CH5 stays at position 3 （namely GPS mode）.CH6 is for switching modes among Auto-hovering/Auto-navigation /Auto-returning home & landing.

The switch of RC receiver is button which showing "Receiver off" or "Receiver on" in GCS, used to turn off/on the RC receiver on craft ,namely any operation is useless for aircraft if receiver displays "RC off" , which equals there is no RC receiver on the craft. It is not suggested to close the receiver (RC off) if user isn't familiar with the system.

Mobile RC Status means whether the cross operation is enabled or not in the mobile RC interface, enable the GS software and click " RC on", there is a "round circle" showing on the "cross" ,indicating "Mobile RC status "has been enabled ".Select " RC off" ,there is no round circle on the cross ,indicating "Mobile RC status " has been off.

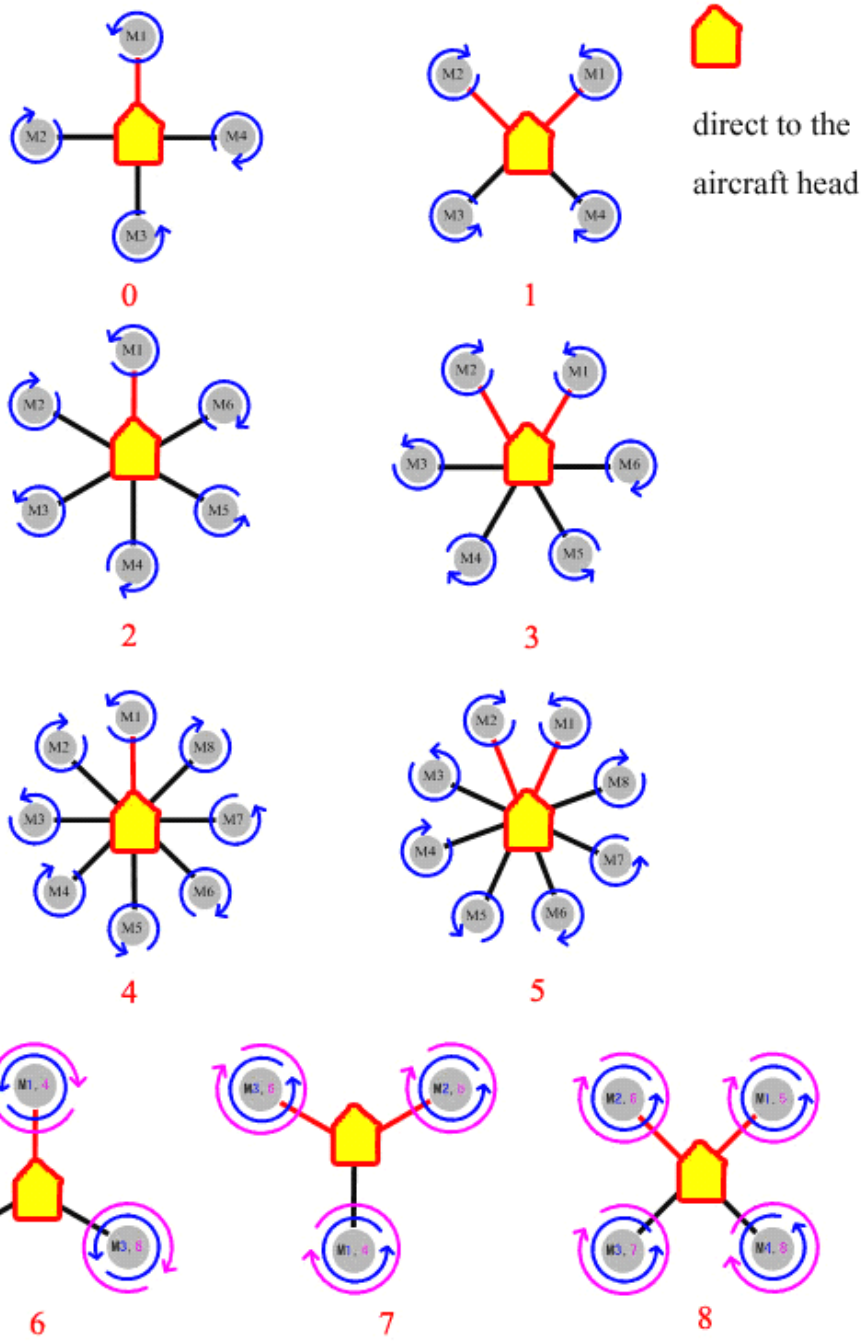
RC Status	CH5 Status	Mobile RC Status	CH6 Status	Craft Status	Priority
RC off	X	Enable Automatically	X	When controlling by mobile, there is a "round circle" showing on the "cross". When losing WIFI or signal exceeding 10s, auto-returning home and landing. (This mode is not commended to hobbyists.)	1
RC on	CH5 Manual	X	X	In full manual mode, it's controlled by RC transmitter only. Note: No strong actions/ No high speed when flying in manual mode.	2
	CH5 Auto (In position 3)	Mobile "Control" on	CH6 position1	When controlling by mobile, there is a "round circle" showing on the "cross", please check the mobile status, it has nothing to do with the RC Transmitter.	3
			CH6 position2	Enabling waypoints on mobile can get into "Auto-navigation" mode. (Make sure the waypoints is uploaded)	
			CH6 position3	"Auto-return home & landing" mode	
		Mobile "Control" off	CH6 position1	"GPS auto-hover" mode , if the throttle is in the minimum, craft may go down fast, meanwhilethe throttle should be maintained in middle-position.	4
			CH6 position2	Enabling waypoints on mobile can get into "Auto-navigation" mode. (Make sure the waypoints is uploaded)）	
			CH6 position3	"Auto-return home & landing" mode	

Note : X represents any kind of status .When mobile transmitter is turned on ,there is a round circle showing on the cross. When Mobile transmitter is turned off , there is no round circle showing on the cross .RC status is "receiver on "and "receiver off "status in GS .priority:1 represent the most.

6 aircraft type

For those with props on both top side and bottom side , blue means the props on the top, purple means those on the bottom. In the other situations, all the props are on the top.

The arrow in the figures means the head of the aircraft ,the "aircraft type" item in the parameter settings ,can be filled with the number on the left bottom of the aircrafts below. There is no any instructions regarding customized craft type here, please refer to "User Manual" for the details.



Custom aircraft parameters

Mixing the way of custom parameters can be specified by the user of the motor, the user can define the scale factor of the increase or decrease in speed of each motor in the roll, pitch, turning to the application of the Alien" and other unconventional layout of multi-axis rack.

The parameter definition of the throttle: all 100, fill out the error will cause the power is turn very dangerous!

The parameters of the heading angle is defined as: to achieve the rotation of the aircraft right, corresponding to the motor speed changes, year-on-year decreases of -100, an increase of 100.

The pitch of the parameters are defined as: aircraft bow overlooking the corresponding motor speed changes, year-on-year decreases of -100, an increase of 100.

The roll of the parameters are defined as: when the aircraft right roll, corresponding to the motor speed changes, year-on-year decreases of -100, an increase of 100.

For example: 4-axis X-word flight parameters are set as follows:

Must be at the ground station "Settings" page "custom parameters" fill in the parameters of the confirmation (parameter setting error will cause the power or the types of aircraft to 10, the motor immediately high-speed rotation is strongly recommended that users willall to remove the propeller, in order to ensure absolute security) will be changed to 10 types of aircraft (Aircraft type) parameter values , access to parameter confirm rewrite success, after the flight control power, push the small throttle low speed rotation, double-checkwhether the mixing and setting consistent, after the success of the flight.

7 Enable motors、stop rotation and F/S

Enable motors protection

Any time after landing or before take-off, only if it is manual mode and the throttle stick is at the bottom position, the motors can be locked up completely after 5 seconds ;After locking up, motors won't rotate even if push the throttle stick. The insurance only can be enabled through "enable insurance" on mobile or broken rod.

Motor Off

Only in manual mode and without holding altitude, the motors stop rotating with pulling the throttle stick back to the bottom. Other time, if pull back the throttle stick to the bottom, the motors won't stop rotating but only decrease altitude. Whenever need to stop the motors urgently, below ways can help:

(1), Switch CH5 to position 1, namely in manual mode but without holding altitude, what's more the throttle must be in the minimum.

(2), when mobile phone select "RC off", select " motor off" on mobile RC interface ; Or turn on the receiver "RC on" , according to the method (1);

(3), After auto-returning and landing on the ground, select "motor off" on mobile RC interface and confirm; Or turn on the transmitter, according to method (1);

(4), After landing on the ground in holding altitude or GPS mode, press the cross down continuously , namely the landing throttle or RC throttle are in the bottom all the time, motor will stop rotating slowly till shut down completely and lock up .

Wifi signal loss

(1) when RC is turned on , if the wifi signal loses more than 1 second, then transfer the right of control to the transmitter;

(2) when user select " receiver off" (RC closed), all of transmitter operation is invalid, the right of control are managed as follows:

A. In the case of " waypoints flight " , the waypoints flight will not be influenced if there is no wifi signal, and go back to the first point to hover after finishing flight , then estimate whether wifi signal has recovered or not , if unrecoverable ,then manage as following;

B. when it's not " waypoints flight "or aircraft hover in the first position after finishing waypoints, wait 10 seconds if the wifi signal loses, ,and continue to operate if the signal recover; If there is no signal after 10 seconds, then enable the temporary returning & landing ; if the signal recover again, then stop returning instead of hovering. Hovering can accept mobile cross control and " returning & landing", "enable waypoints ", " motor off" switch control. Continue to return and land if the signal is not recovered,.

RC signal lose

Users must refer to the instruction of RC transmitter to set F/S correctly ,and set CH5 to position 3,CH6 to position 1, throttle to the center(tips are in the installation guide).If enable F/S for any reason in "RC on" status ,the RC transmitter will be switched to auto- hover status（continue waypoints for 3 seconds in auto-waypoints）to wait for 3 seconds .Start to return if the signal can't recover after 3 seconds.

8 Mobile Remote Control

During flight, when RC Transmitter is switched to "Auto-hover" of " GPS mode", the craft shall get into auto-hover. Meanwhile click GCS on mobile→ "enable control/disable control" to enable or disable the control operation.

Mobile remote control operation ways as below:

RC ON	Operation method	Aircraft status
Circle area	Red: Un loacated; Green: located.	Keep still
Position hold	DO NOT touch any area	Position hold.
Operation	1. Press the circle and move up/down 2. Press the circle and move left/right 3. Press the circle and move left top, left bottom, right tip, etc.	1. move back and front 2. move left and right 3. Move lefttop,leftbottom,etc.
Climb/ Decline/rotate	click the circle and move in the range of the red cross: 1.top 2.bottom 3.left 4.Right Note (1) The distance to the red dot means the flight speed. The farther ,the faster. (2) Press=moving, release=stop moving (3) Release=position hold immediately (4) The Maximum speed is 2.5 m/s	1、Climb 2、 Decline 3、rotate to the left 4.rotate to the right

Notice:

In GCS "Settings" , there is "change altitude" there, when in auto mode and the throttle stick is in the middle position, can put in target altitude directly (unit: meter) and confirm, then the craft will go up or go down to the decided altitude.

9 flight

（1） motor arming notice

Throttle unlock :move rod as V shaped when the throttle is in the bottom .Push throttle stick to enable the motor in 5 seconds .After 5 seconds ,the motor insurance will be locked automatically.

Rod moving :rudder in the most left ,elevator in the bottom, aileron servo in the most right ,throttle in the bottom. For the right or left throttle, user need to judge by self that the motor arming direction is 八 or V shape.

After moving rod as V shape, motor will not be enabled automatically , user need to push the throttle stick to the minimum direction to enable the motor after moving rod.

（2）vibrating state and shaking

During flight ,user need observe the "vibrating state" and" shaking " in "data" to judge the shaking status of IMU .In stable flight , it is normal when the "vibrating state" and "shaking " range from 0~9， the smaller the number the smaller the shaking ,the number will affect flying quality directly.

Vibrating coefficient :the maximum accelerated speed of up-down、 left-right、 back-forth three directions' alternate motion(vibrate).

Shaking coefficients :the maximum angular velocity of rotary movement rounding X、Y、Z three axises.

（3）manual and actual rudder position

Manual rudder position

After channel calibration via transmitter ,the direction 、elevator and aileron servo of " manual rudder position " in GS should be in the middle or in the minimum (no more than 2) when user put the stick in the middle . if user already adjusted the minitrim and the manual rudder position is not near the center, need to click "capture center" in "settings" to record the correct center position of stick

Actual rudder position

Actual rudder position is the differential relation of motor rotate speed outputted by autopilot to keep stable during flight. Example :when clockwise and anticlockwise propellers lose balance(suppose clockwise motor is unleveled loaded ,the reaction torque generated by it is smaller than that generated by clockwise motor), when in level flight and course angle unchangeable ,the actual rudder will keep stable to left 5~7。With the same pulse width output ,the reaction torque generated by clockwise motor is smaller than that generated by anticlockwise in the same rotate

speed ,which lead aircraft rotate to the right , autopilot will output levorotation torque automatically ,namely the differential make the clockwise rotate speed faster and anticlockwise slower.in this condition, aircraft can fly normally not hovering ,but the power consumption and temperature of clockwise motor are higher than the anticlockwise motor's .So ,it is suggested that user need to precisely detect the balance and level symmetry of motor and propeller to get a more stable flight.

（4）auto-takeoff and auto-landing

A. semi-automatic takeoff

When GPS location is more than 5 stars ,switch CH5 to position 3 and CH6 to position 1, namely the flight status is "auto-hovering",then push the throttle stick after moving rod in V shaped , when throttle stick is more than 50%, aircraft will be powered on and take off automatically, hovering in the height of 3 meters about and getting into the auto-hovering status.

B. Notice: aircraft can take off fully-automatic only if the aircraft has completed semi-automatic takeoff and succeed.

Step 1 , wait until the GPS location stars are over 5, put the THR in the minimum or in the middle , switch CH5 to GPS mode (the third position) ,CH6 to the first position .

Step 2, press the "insurance on" button ,or move rods as V shaped to make the throttle unlocked, then continue the next step within 5 seconds.

Step 3, click "auto-takeoff ",the aircraft will be powered on and take off slowly ,hovering in the height of 2~3 meters .

Step 4, if the throttle is in the minimum when auto-takeoff , if you want to control the height ,you must move the THR to the middle .

Note: if there are any accidents during take-off you can switch to manual mode to control the aircraft .

C. auto-returning home and auto-landing

Autopilot will set the returning position automatically when GPS has been located or aircraft take off in manual/auto mode.

In GPS mode , when switch CH6 to position 3 or select "auto-returning home & landing" in the mobile and meanwhile confirm ,AP will enable auto-returning home & landing after waiting 3 seconds ; and the motor will fly automatically to 20 meters if the height is less than 20 meters and the throttle rudder don't work during the returning ,the motor will land automatically when reaching returning position and can interferes the landing position ;After enabling "auto-returning" , it can't prevent autopilot to return &auto-land if switchingCH6 back to "auto-hovering "and "auto-navigation" ,unless switch CH5 to manual position(position1/2) and then back to holding position to continue hovering .

Notes :click "motor off" and confirm to shut down the motor.

（5）click & go

Using mode : in GPS auto-hover mode

First, click any point on the map and it can appear a yellow smile there.

Second, click "click & go"(the button will get grey if no click few seconds beyond ,then need to click on the map again and the yellow smile will appear),the yellow round smile will change to purple star smile .The operation of flying to the next position is same as above .

（6）fly circling around one point

Using mode : in GPS auto-hover mode

First , it will appear a yellow smile while clicking any point on the map,

Second , click "stabilization lock" button. After yellow round smile changing to purple star smile, the head of aircraft will face the locking point,

Third ,user can operate in RC interface .

Remark1: When left aileron outputs in RC interface, the aircraft will hover clockwise around the locked point. When the right aileron outputs, it will hover anti-clockwise.

Remark2: Pushing the stick can decrease the hovering radius and drag the stick can increase the hovering radius.

Remark3: After selecting " stabilization lock off" in "tools"，the up-down operation and aileron operation will be normal.

（7）waypoints flying

Steps

Step1: click "tools"->"path settings", to generate the waypoints, one click on the map can get one waypoint , get all the waypoints one by one. Click "restore default" to finish the path generating.

Step2:After generating the path, click "upload path" to send the path data to the AP. Check if every waypoint change to blue to confirm the uploading states, and check the QTY of the waypoints in the "target number" item, see if it is matched with the QTY of the set ones,if not ,re-upload it one more time. Any waypoint that is not changed to blue, can be re-uploaded with all the other waypoints, or re-uploaded for itself.

Step3: Click "remove waypoints" to recover the blue waypoint to Red, then select "Verify waypoint" from "Tool", download waypoints to ground station for comparing, if all waypoints are blue, that indicates the saved waypoints in RC are coincident with GS waypoints and waypoints checking succeed. Otherwise need to upload waypoints again.

Step4: AP shall get into auto-waypoints mode while putting Channel5 of RC to auto-positions， Channel6 to auto-navigation bar. Arriving first point 悬停， set

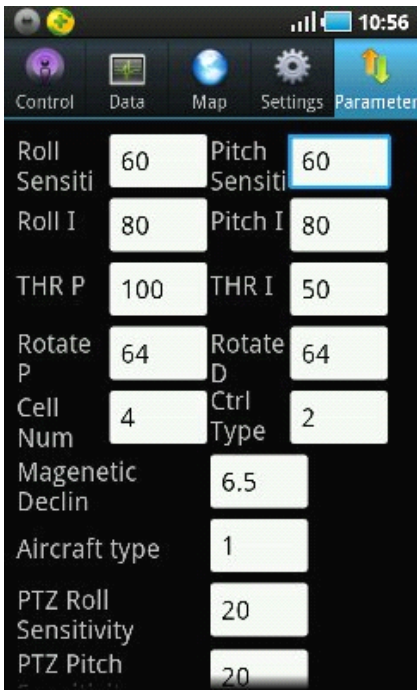
number2 in "change goal" of setting interface and upload, then beginning waypoints flying according to the order of 2、3、4..... even finish all waypoints and go back to first point to hover。

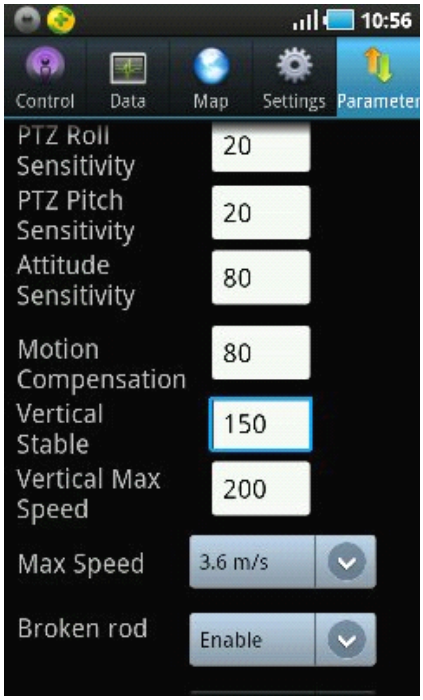
Remarks : if waypoints are uploaded uncorrectly ,the aircraft will fly away automatically when switching to auto-nagivation.

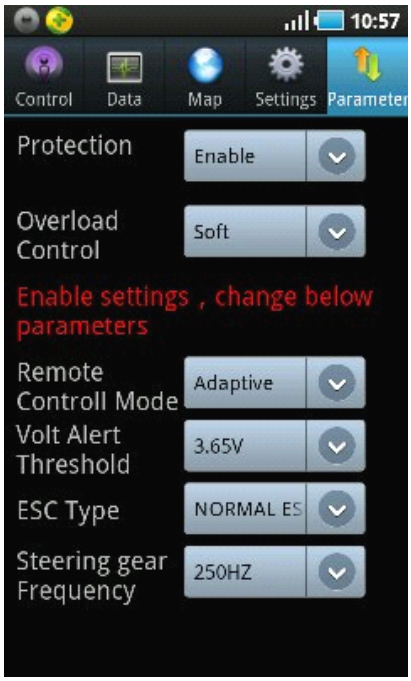
10 Parameter Setup

Default Parameters

Origin Default parameters is as below from Quad-rotor X type, most crafts can fly well with the default parameters.







"PTZ Roll Sensitivity" & "PTZ Pitch Sensitivity" can affect the sensitivity when performing by hand directly and can be changed, but NO recommendation on changing "Roll I/Pitch I/ THR P/THR I/Rotate P/Rotate D.

The definition of left parameters as below:

Battery quantity： AP will calculate the battery power according to the battery quantity which is filled by users. When the mobile vibrates once each 2s, it indicates low power, warn user's attention. When the mobile vibrates once each 1s,it indicates very low power and the aircraft must land at once.

Control Method :Default completing box2{1.aititude mode(fit to adjust parameters ,dynamic flight),2,acceleration mode(fit to static flight)}

Magnetic declination

Fill in local magnetic declination, deflection to West is Positive pole, to East is negative pole(most regions in China are deflecting to West).Example: Magnetic declination is 6degree 30' West, namely 6.5 degree, then fill in 6.5.

Please refer to website about magnetic declination

http://www.ngdc.noaa.gov/geomagmodels/struts/calcDeclinat

Aircraft Type Fill in flight mix control type, please refer to Appendix 2.

It's used to adjust the correction angle of gymbal. If user feel correction angle is small, can fill in bigger number, on the contrary fill in smaller number(note: can fill in)

It is the title angle coefficient revised when aircraft resist the external force .It is more sensitive to the external force if the number is bigger , the default number is 80,adapted to most aircrafts.

In GPS mode, the maximum default speed of up and down (unit is cm/s) is 200 ,namely 2 meters/ second , the maximum number which can be setup is 255.

The default value is 80, adapted to most aircrafts. , increase the shaking compensation number to get a more stable flight if the aircraft has big shaking .But it will lead to high-frequency dithering if the number is too big. Setup range :0~255.

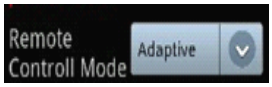
It is useful only in manual mode and with no holding altitude ,to increase the comfort degree of full-manual transmitter control, the default value is 150.The pressure has big influence on motor stability when the number is big . If the pressure is not stable in windy days ,too big number will affect the comfort degree of throttle in manual mode and with no holding altitude.

Setup: maximum flight speed.

Setup: whether to use motor arming to release throttle protection

Setup: whether to enable the throttle protection

The 4 parameters below need to be filled in when use first time, when filling must make sure the throttle stick is in the bottom firstly; if click "enter setting " in "setting" interface ,you can update the parameters when "setting status" displays in "data" interface .After completing then click uploading to AP, it only can fly after getting confirmation of parameters .C lick "exit setting" in "settings" , AP can fly.

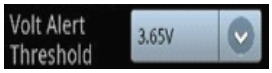


User select the options according to current RC mode, the setting must be right!

Self-adaptive: AP select the options according to the using RC Tx.

Normal: Normal FUTABA Receiver, AP CH1 connect Receiver CH1, AP CH2 connect Receiver CH2.

S-BUS: Only connect AP CH7 to the Receiver S-BUS port



Voltage initial warning number

Fill in the warning voltage which each battery is been using, user can fill after measuring by self. Usually fill in 3.65.

ESC Type

Filling according to the ESC type which user is using.

Note: Wrong filling between Normal ESC and XA ESC will lead to the propeller go out of control after being powered on.

Rudder output Frequency

Filling according to the Rudder which is being using,50HZ is i 模拟舵机，250HZ is digital rudder

11 Power module and speed sensor

（1）Power module

When YS-X6 autopilot are access to power module, user can observe the present discharge current and battery consumption directly in "data " of GS .If make use of this function，user must connect the autopilot to power module firstly ,push the throttle stick to the bottom , then power the autopilot .After that ,AP will reset sensor speed to zero automatically ,and start to output the current value (ampere A) and power consumption(MAH) according to the detection of power module.

（2）speed sensor

When using SBUS, after emptying CH8、A、E、T、R、CH5 channels , speed sensor can be connected to show the accurate rotation speed of each motor ,so user can observe the efficiency and balance of the multi-axis aircraft conveniently . when not using SBUS ,the CH8、A、E、T、R、CH5 channels are occupied by receiver connection ,so user can not use the speed sensor.

User can insert the Dupont head of speed sensor which are designated compatible with YS-X6 , into CH8、A、E、T、R、CH5(four-axis connected to CH8、A、E、T) of AP according to the order of M1~M6, connect the other end of detection line on speed sensor to any phase among three-phase power line on each corresponding M1~M6 motor ,and weld firmly.

In "settings" of GS menu ,fill in the motor magnet quantity (the pulse value produced by motor when rotating a pad),namely user can observe the current rotation speed of 4 or 6 motors on "data" interface .The updating frequency of rotation speed is 5HZ,namely the rotation speed is detected and display 200ms.

12 Data Link connection extension

User can purchase XB-PRO900 radio on selection to extend the control distance, making the GS and mobile phone control away from the limit of WIFI distance. For XB-PRO900 radio, the transmission power is 100 mW, the frequency is 900 MHZ, communication distance measured actually is not less than 2 ~ 3 km (open areas). XB-PRO900 radio's physical interface is RS232, communication baud rate is 115200 BPS.

A pair of XB-PRO900 contains two radios, set-top one, ground one, encapsulations are consistent and interchangeable.

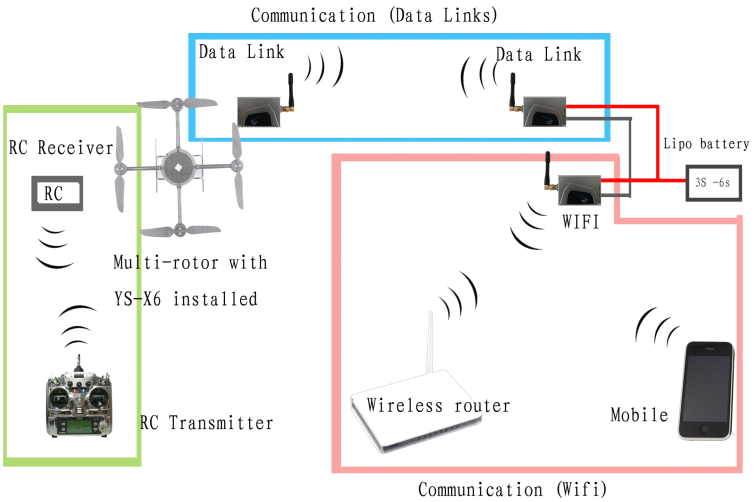
（1）Data link connection on Craft

Take WIFI module off from multi-axis aircraft, and loadthe radio to the aircraft with reference to the connectionmethod of WIFI module, and connect the radio to AP COM3 .

Data link connection on Craft

（2）Data link connection on the ground

Connect the WIFI module taken off from the aircraft to another radio on the ground(using the connecting lines with radio), to supply power with wireless routers on the ground together .Namely the parts on the ground are: the ground station, WIFI module, wireless router .



Radio and WIFI both are power-up by 3 S ~ 6 S lithium battery (same as master board of AP), the power line is red –and-black color line, red is positive and black is negative.

13 joystick connection

After purchasing the joystick , users can use it to control the aircraft in GPS mode. When radio is unconnected , joystick control distance depends on WIFI distance. When using XB-PRO900 radio, the control distance of joystick depends on the communication distance of radio.

Joystick contains two parts: joystick and joystick WIFI. (note: different from the communication WIFI above, not general)

（1）Joystick connection

The joystick connection is quite simple, just need to connect joystick WIFI to joystick according to the inllustration above, and power it in a convenient place , joystick can work automatically .

Note: joystick and WIFI both are power-up by 3 S ~ 6 S lithium battery (the same as AP master board), the power cord is red-and-black color line, red is positive and black is negative.

The connection signal lines of joystick and joystick WIFI, are three-color dupont line.

（2）joystick instructions

1. In GPS auto-hovering mode(CH5,position3) , can use joystick to control the aircraft . After power the joystick , joystick operation equals to the cross operation on mobile "RC" interface. To avoid the confliction with mobile cross operation, turn off the mobile RC in mobile GS to cancel the round circle on the cross.

2. When RC is closed , the round circles on RC cross interface in mobile GS will display once automatically .At this time can't use the joystick ,otherwise it equals there are two cross operations at the same time .If now need to use joystick , select "menu" and click " RC off" in mobile GS ,and when the round circle on RC cross interface disappear ,can use the joystick.

14 else

（1）Motor twitch and stalled fault

The PWM signal output of AP YS-X6 ESC adopts FPGA(Field Programmable Gate Array), outputting the PWM signal in hardware state, The signal will not stop outputting even if the processor freezes only if it's powering, it's a reliable device to output signal. Generally , except for connection line loss and contraction undesirable ,motor twich and stalled fault are mainly relevant to the matching of motor、ESC and propeller, commonly it is the out-of-step that lead to the phenomenon of switching and stalling .When YS-X6 select the ordinary ESC , PWM output are as following:

high electrical level output: 3.3 V

Internal operation frequency: 250 HZ, namely 4 ms a caculation cycle

pulse width output frequency: 400 HZ, or 2.5 ms a pulse width

Pulse width range: 1000 us ~ 2000us

Pulse width changing speed: : a caculation cycle (4 ms), pulse width adjustment is no more than 60 us, namely great changes adjustment of pulse width are limited to 60 us for each calculation cycle, to reach the final pulse width via accumulating many periodic adjustment.

Users are suggested to consult ESC and motor manufacturer to select the matching auxiliary equipment, ruling out the possibility of stalled or twitching. For the safety of you and other people, any time don't be careless, aircraft will not safe in dangerous area or over the crowd.

（2）aircraft shaking adjustment

First , the deviation of installation direction or vibration or shaking will retardative IMU test aircraft. So user need to check IMU installation、 vibration and shaking coefficient, and reduce vibration and shaking coefficient within 10 (the smaller the better) with various kinds of Suspension means ;

Second ,the attitude adjustment of multi-axies are based on motor speed adjustment ,so the ruder sensitivity will affect the attitude adjustment accuracy directly .User need to adjust the weight 、pitch propeller matching once more，to make motor keep enough speed and generate enough rudder effect. For the aircraft seeking high efficient configuration , the flight stability decline is inevitable ,user only can select appropriate balance between the flight efficiency and stability;

Third, the symmetry of multi-axis aircraft has significant effect on flight stability . in the third quarter of Chapter 9"actual rudder position", user can estimate the symmetry of motor and propeller in level flight. If fail to adjust the symmetry, user

must spend more energy in motor body and dynamic configuration;

Fourth, if the above three steps are finished ,user can adjust "toll sensitivity", "pitch sensitivity" in " parameters setting" , namely set the reversing dynamics of AP ;And adjust "shaking compensation", namely set the reversing stabilization quantity of AP to do some certain adjustment.